CASE REPORT & INTERVIEW

Treatment of Severe Coronary Artery Disease in a Diabetic Patient Using the Resolute Integrity Stent: A Case Study

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Intro/Abstract
The Resolute Integrity drug-eluting stent (DES) (Medtronic) was approved for use in the U.S. in February 2012. The first stent to have an indication for the treatment of coronary artery disease in diabetic patients, the stent has enjoyed rapid adoption in the clinical arena. The following case study illustrates the effective use of this stent in a diabetic patient.

CATH LAB MANAGEMENT

Community-Based Collaborative Vascular Disease Detection

How one center utilized the PADnet Disease Management System to grow its service line
Cath Lab Digest talks with Jane Bower, CV Service Line Director of Development, West Georgia Medical Center, LaGrange, Georgia.

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THE TRANSRADIALISTS

Iliac Artery Intervention via Radial Access

Matthew Evans, DO, Kintur Sanghvi, MD, Deborah Heart & Lung Institute, Browns Mills, New Jersey

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Tell us about your cath lab.
Crouse Hospital is a 563-bed not-for-profit hospital located in Syracuse, New York. Within the Cardiac Care Center, there are three cath labs and a nine-bed admission/recovery area. Crouse is an Accredited Chest Pain Center and Heart Failure Center by the Society of Chest Pain Centers and is the site of the region’s only pediatric cath lab. We have twelve registered nurses (RNs), one licensed practical nurse (LPN) and one interventional radiologic technologist. Several nurses working in the cath lab are currently working on either a bachelor’s or master’s degree in nursing. Together, our staff has an average of 15+ years experience in cardiovascular nursing.

What procedures are performed in your cath lab?
We perform diagnostic and interventional cardiac catheterizations, patent foramen ovale (PFO) closures, temporary and permanent pacemaker insertions, implantable cardioverter-defibrillator (ICD) insertions, pediatric catheterizations and ablations, emergency balloon septostomies on newborns, and diagnostic and interventional peripheral vascular studies. We also have the capability for intra-aortic balloon pumps, pericardiocentesis and thrombectomies. We perform approximately 35 scheduled procedures a week, and provide 24/7 emergency call for adult and pediatric emergencies.

Crouse Hospital
Lorissa Plis, DNP, RN, CNS, CCNS, CCPC, Manager Cardiac Care Center & Chest Pain Center Coordinator, Crouse Hospital, Syracuse, New York

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Crouse Hospital
Lorissa Plis, DNP, RN, CNS, CCNS, CCPC, Manager Cardiac Care Center & Chest Pain Center Coordinator, Crouse Hospital, Syracuse, New York

Does your cath lab perform primary angioplasty without surgical backup on site?
Yes. We have an agreement with SUNY University Hospital, which is adjacent to Crouse Hospital. In the event of an emergency surgical intervention, patients are transported via a connecting tunnel directly to the University Hospital OR.

What percentage of your patients is female?
Forty-five percent of the patients we see are female.

What percentage of your diagnostic caths is normal?
On average, 74.16% of our patients need an intervention at the time of their catheterization. Only 25.82% are normal.

Do any of your physicians regularly gain access via the radial artery?
Yes, almost exclusively. We have been using the radial approach since 1997. We only utilize a femoral artery or a brachial cut-down approach when absolutely clinically necessary. The radial artery is even the site used with emergency ST-elevation myocardial infarction (STEMI) patients. Femoral arteries are reserved for right heart caths and for patients who absolutely cannot be accessed through the radial artery.

Who manages your cath lab?
Lorissa Plis DNP, RN, CNS, CCNS, CCPC, is the Cardiac Care Center manager and Chest Pain Center coordinator, Robert Pikarsky is the administrative director and Joseph Battaglia, MD, FACC, FSCAI, is the medical director.

Do you have cross-training? Who scrubs, who circulates and who monitors?
All RNs in the department rotate scrub, circulator and monitor roles. The LPN and the RT cannot push intravenous medications, so they only scrub and monitor cases. The RT is responsible for the radiology equipment and radiation safety.

Does an RT (radiologic technologist) have to be present in the room for all fluoroscopic procedures in your cath lab?
No, but we have a RT on staff in the cath lab. She is present and available for all cases, but is not assigned to each case. The physicians initiate and operate fluoro in all the cases.

Which personnel can operate the x-ray equipment (position the II, pan the table, change angles, step on the fluoro pedal) in your cath lab?
Only trained physicians and the interventional radiological technologist can operate the x-ray equipment. The physicians in our lab typically operate the fluoro pedal and pan the table during cases; however, the RT can assist with positioning the II, panning the table, and changing the angles or operating the fluoro pedal as needed. Nurses have no involvement in any of these duties.

How does your cath lab handle radiation protection for the physicians and staff?
Radiation safety is very important to us. Our RT and the inventory and equipment support specialist sit on the Radiation Safety Committee. We monitor and disclose radiation levels monthly to staff and are always looking for strategies to reduce radiation exposure.

What are some of the new equipment, devices and products recently introduced at your lab?
Because safety is our priority, we have instituted the use of the RadPad for our fluoro cases (Worldwide Innovations & Technologies, Inc.). The RadPad is a disposable, lead-free pad that reduces scatter radiation exposure to medical personnel during fluoroscopy procedures by 95%. We are also implementing the LUMEDX Cardiovascular Information System for real-time scheduling, and cardiac catheterization and echocardiography physician documentation. We have a dedicated cardiovascular information system (CVIS)/picture archiving and communications system (PACS) manager, Justin Pratt, AEMT-P.

How does your lab communicate information to staff and physicians to stay organized and on top of change?
We utilize email, bulletin boards, staff huddles and a communication book. We have Vocera for day-to-day communication and group pager systems.

How is coding and coding education handled in your lab?
The coder is located outside of the Cardiac Care Center, but she is in daily communication with Janice Jorgensen, our inventory and equipment support specialist. Janice was a LPN in the cath lab, but now oversees equipment and supplies, and coordinates with coding to assure our service codes and billing sheets are up to date and compliant.

Who pulls the sheaths post procedure, both post intervention and diagnostic?
Since we primarily do the radial approach, we do not have many femoral artery sheaths. We use closure devices on any patient who can be closed. When a manual press is required, all the cath lab staff is trained to perform it. During the orientation period, staff must perform five manual press sheath removals with their preceptors before performing independently.

Where are patients prepped and recovered (post sheath removal)?
Patients are prepped and recovered in our pre and post care observation areas. We have dedicated post sheath recovery areas with their own nurses and physicians.

Quality Cardiac Care is a team approach; we are happy to partner with our EMS and Emergency Department to provide the best in patient care and promote community health. Pictured are Susie Barnett AEMT-P, Dr. Richard Steinmann (Emergency Department), Dr. Anil George (interventional cardiologist), and Crystal Barus MS, RN.
area, housed in the cath lab area. Sheaths are typically pulled while the patient is still on the cath lab table. Patients in whom activated clotting times (ACTs) are high, where sheaths cannot be pulled immediately, are moved to the recovery area, where sheaths are pulled by a staff member when appropriate. We utilize a closure device (Angio-Seal, St. Jude Medical) whenever possible to avoid manual pressing.

What is your lab’s hematoma management policy?
The cath lab staff manages all access sites throughout the hospital.

How is inventory managed at your cath lab? Who handles the purchasing of equipment and supplies?
Inventory is ordered and managed by the inventory and equipment specialist. We perform daily reconciliation of critical supplies, stents and balloons. Each room has designated par levels of supplies, and the rooms are assigned daily for restocking. The inventory and equipment specialist is in charge of all ordering and maintenance of supplies. New products are introduced through our Cardiac Value Analysis Team (VAT) for approval.

Has your cath lab recently expanded in size and patient volume?
We recently transitioned all ICD implants from the main OR to the Cardiac Care Center. We are in the process of expanding our hours of operation to accommodate early admissions and late discharges directly from the Center, rather than utilizing the Recovery Care Center. This expansion will allow for later scheduling of procedures and allow for increased volume.

Do you have a hybrid cath lab, or are you planning to build one?
Yes, one of our labs is a hybrid lab. We have the Mac-Lab as our hemodynamic system (GE Healthcare) and Siemens medical imaging equipment.

Is your lab involved in clinical research?
Yes, we are active in many clinical studies, in coordination with our cardiologists. We are also active in research with our emergency medical services (EMS) community. We also participate in the American College of Cardiology National Cardiovascular Data Registry (ACC-NCDR) and the NCDR-ICD Registry.

Can you share your lab’s average door-to-balloon (D2B) times and how employees at your facility have worked together to keep D2B times under the mandated 90 minutes?
We are incredibly proud of our D2B times. In 2010, our mean D2B was 45.25 minutes and in 2011, it was 39.25 minutes. We achieve over 81% of our cases in less than 60 minutes, and 100% were achieved within 90 minutes in 2011. We do participate in the AHA Mission Lifeline and the American College of Cardiology’s D2B Alliance.

Who transports the STEMI patient to the cath lab during regular and during off hours?
STEMI patients are transported by a combination of ED nurses, paramedics, physicians and cath lab staff. The minute the cath lab is ready, we roll, so whoever is at the bedside at the time transports. This is the case with both on and off hours.

What do you do when the call team is already busy doing a procedure and a STEMI comes into the ED?
We utilize a group page system. If the team is already in the middle of case, a second page goes out. Because only one physician is on call for the cath lab at a time, the case on the table is finished while the STEMI is prepped in another lab.

What other modalities do you use to verify stenosis?
We use intravascular ultrasound (IVUS, Volcano Corporation) and fractional flow reserve (FFR).

What measures has your cath lab implemented in order to cut or contain costs?
We have a Value Analysis Team (VAT) that is constantly looking for expense reduction and operational efficiency savings. We re-evaluate contracts, custom packs and supplies on a continuous basis, and are very aggressive in empowering staff and physicians to look for cost containment and expense reduction ideas.

What quality control/quality assurance measures are practiced in your cath lab?
Crouse Hospital is both an Accredited Chest Pain Center as well as an Accredited Heart Failure Center, so we are measuring many clinical indicators, including, but not limited to D2B times, transmission rate for EKGs from EMS, readmission rates, and turnaround times for troponins. We also measure multiple value-based purchasing indicators as well as patient satisfaction, employee satisfaction, physician satisfaction, and Hospital Consumer Assessment of Health Providers and Systems (HCAPS).

Are you recording fluoroscopy times/dosages?
Yes, we document our fluoro times and doses in the Mac-Lab electronic clinical event logs and in our logbooks. We have protocols in place for high fluoro exposures for long-term operations.
The cath lab staff is trained in adult cath, pediatric cath, and electrophysiology procedures, as well as device work. This training really sets them apart from other labs in the region.

Where is your cath lab located in relation to the emergency department (ED)?

The cath lab is below the ED and there is a dedicated transport elevator for patients to be brought down to the cath lab.

What trends have you seen in your procedures and/or patient population?

We are seeing a very disturbing trend of acute myocardial infarctions (AMIs) in our 30- to 50-year-old population.

What is unique or innovative about your cath lab and staff?

We are almost exclusively a radial approach lab (for adults only). Patients have learned of this option and often come in requesting this approach. We are also the only pediatric cath lab in the region. The cath lab staff is trained in adult cath, pediatric cath, and electrophysiology procedures, as well as device work. This training really sets them apart from other labs in the region.

Is there a problem or challenge your lab has faced?

Our greatest struggle is with consistency of scheduling. Given the nature of the cath lab, it is often hard to predict volumes. We work closely with our cardiology practices to try for consistency in scheduling elective caths, but inpatient and emergency cases are far less predictable. Work-life balance for the staff is very important, so we work hard at trying to help them achieve this.

What’s special about your city or general regional area in comparison to the rest of the U.S.? How does it affect your “cath lab culture”?

Syracuse University is adjacent to our hospital. Syracuse University football and basketball draw very big crowds to the “hill” where the university and Crouse Hospital are located. This creates large traffic jams and reduces accessibility to the hospital. As a result, we require on-call staff to stay in-house 2-3 hours before game time until the start of the game in order to ensure there are no delays in D2R times.

The Society of Invasive Cardiovascular Professionals (SICP) has added two questions to our spotlight:

1. Do you require your clinical staff members to take the registry exam for Registered Cardiovascular Invasive Specialist (RCIS)?

At this time, it is not required. We do encourage it and several staff members are in the process of obtaining their RCIS credential. They will receive an additional hourly stipend per union contract upon obtaining the RCIS.

2. Are your team members involved with any professional organizations that support the invasive cardiology service line?

Members of the cath lab leadership have joined SCPC, AACN, SICP, and ACC.

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